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ABSTRACT

Forty female undergraduates were randomly assigned to one of four stress-inducing conditions: one group was given a defensive strategy in the form of denial, rationalization, and intellectualization self-statements (Film S-T); a second was given self-statements designed to help them control their arousal (Arousal S-T); a third group was given relevant information about the nature of the film (Info); and a fourth group was given no relevant information (Control). Measures of self-report of anxiety, cognitive coping techniques, and heart rate were examined during the anticipatory period and throughout the film period. Arousal and Film S-T subjects were significantly more physiologically aroused while anticipating the film, and Control and Info subjects reported higher levels of anxiety due to the film. The relevance of anxiety thoughts made by some subjects prior to the stressor was found to be significantly related to the amount of worry and apprehension reported both while anticipating and during the stressful film. The study provided partial support for the "work of worrying" concept described by Janis and elaborated upon by Meichenbaum. These findings and their implications were discussed. (Author)

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THREE COGNITIVE APPROACHES TO REDUCING STRESS

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While the importance of cognitions in emotion has been empirically examined by a number of investigators in recent years, the problem in present day research is not merely to point out that cognition is central to emotion, but rather is to specify the nature of these cognitive processes and to understand their prior conditions. These processes, which determine various emotional responses, have been referred to by Richard Lazarus (1966; 1968; 1975; Lazarus, Averill and Opton, 1970) as the appraisals and reappraisals of events.

In a series of studies commencing in 1964 Lazarus demonstrated how subjects' appraisals or interpretations of the events portrayed in a stressful motion picture when directly altered, produced differing stress response reactions. In the first study (Speisman, Lazarus, Mordkoff and Davison; 1964) a film entitled "Subincision" depicted crude genital operations among Australian aborigines. It was found that the stress producing value of the film was enhanced with a "trauma" sound track and reduced with "denial" and "intellectualization" tracks. In a further study (Lazarus and Alfert, 1964) the same results were found when the approach was somewhat modified by transforming the sound tracks into orientation passages which were played before the subjects watched the film. Thus, it was concluded that one could "short-circuit" or

reduce a subject's stress reaction, as measured by physiological prameters and through verbal reports of "anxiety" felt. The principle of short-circuiting was then extended to another film dealing in wood-shop accidents (Lazarus, Opton, Nomikos and Rankin, 1965; Koriat, Melkman, Averill and Lazarus, 1972).

In other studies, rather than directly manipulating the cognitive events, the focus has been altering those variables on which cognitions depend, such as the manner of coping during the anticipatory period (Cohen and Lazarus, 1973; Janis, 1958; 1971; Langer, Janis and Wolfer, 1975). In his studies of surgical patients, Janis advanced the concept of the "work of worrying", a theoretical construct that emphasizes the potentially positive value of anticipatory fear (Janis, 1958; 1971). The "work of worrying" is described as a psychological process that begins as soon as the individual becomes aware of signs of impending danger that might affect him or her personally. Thus, Janis (1971) suggested that if a normal person is given accurate prior warning of impending pain and discomfort, together with sufficient reassurances so that fear does not mount to a very high level, he or she is less likely to develop emotional disturbances than a person who is not warned. Meichenbaum (1975) elaborated on this by suggesting that the "work of worrying" translated into

sets of self-statements and images which could be rehearsed by the subject and used as imagery rehearsal or muted role taking.

The present study investigated the relative effects of three cognitive strategies on the anticipation and confrontation of a stressful film. More specifically, the extent to which different kinds of "work of worrying" could facilitate coping with a stressor were examined.

Method

Forty female undergraduates were randomly assigned to one of four different conditions. Two groups of subjects were presented with what was described as an effective technique for coping with the stressful nature of the film. One group was given a series of statements to learn similar to those used by Lazarus in his studies in which the stress was " short-circuited". Basically, these statements reflected the use of the cognitive techniques of rationalization, denial and intellectualization to cope with the stressful film (Film Self-Talk). A second group was given statements such as those used by Meichenbaum (1973; 1974; Note 1; Meichenbaum and Cameron, Note 2) in his studies which focused more on controlling the person's arousal as opposed to reconceptualizing the stimulus properties of the stressful event itself (Arousal Self-Talk). The lists of statements given to each of these two groups of subjects are found in Appendices A and B. A third group was only

informed as to the nature of the film that was viewed with the stressful aspects of the film highlighted. Finally, a control group was told nothing about the nature of the film that was to be viewed. All groups were asked to wait for a 10 minute period prior to the film under the guise that the equipment was to be calibrated. This waiting period was designed to assess the subjects' anticipatory anxiety for the 10 minute period prior to the film.

The Self-Report Anxiety Inventory (Girodo, 1974; Roehl, Note 3; Stein, Note 4) was used as a criterion measure of anxiety. The inventory was administered to subjects at four times: upon entering the laboratory, after the instructions, after the 10 minute wait period, and immediately after the film. In order to more closely examine the patterns of cognitions during the 10 minute waiting period, an Attention-Deployment Scale (Stein, Note 4) was administered to subjects at the end of the film. This scale consisted of eight 5-point Likert items measuring the frequency to which the subjects had a particular type of thought ranging from "not at all" to "very frequently". Heart rate was recorded continuously throughout four time periods of the experiment: during a 3 minute base period; during a 10 minute waiting period preceding the film; throughout the viewing of the film; and during a 3 minute period following the film.

Results

The Self-Report Anxiety Inventory (SRAI) was examined

using a 4 (Treatment Condition) X 4 (Period) analysis of variance. Significant main effects for Conditions and Periods were obtained: Condition F (3, 144) = 8.63, $p < .001$; Period F (3, 144) = 10.19, $p < .001$. The mean scores on the SRAI for each of the Conditions during the four treatment periods are illustrated in Figure 1. Post-hoc analysis reveiled a significant difference in SRAI scores reported during the film in that Film S-T and Info subjects obtained lower anxiety scores than Control subjects ($p < .05$). While there were no overall differences in scores between groups during the 10 minute wait period, Arousal subjects reported significantly more "worry and apprehension" compared with Film S-T subjects during this time. Upon examining change scores in SRAI it was found that Arousal and Film S-T subjects increased less in anxiety than Control subjects from the 10 minute wait period to the film ($p < .05$). Each of the groups were then examined individually through F tests followed by correlated t-tests. For the Control group it was found that the Film period produced more anxiety than each of the other time periods ($p < .001$). For the Info subjects the instruction period score was greater than the base period ($p < .05$) and the 10 minute wait period ($p < .005$). Compared with the 10 minute waiting period, the SRAI score during the film was significantly greater t (9) = -4.36, $p < .005$. The Film

S-T subjects showed no significant changes in SRAI throughout the four assessment periods F (3, 144) = 1.58, n.s. The Arousal S-T subjects likewise showed no significant overall change in mean SRAI scores throughout the assessment periods, F (3, 144) = 1.11, n.s.

The Attention-Deployment Scale, measuring avoidant thinking, thoughts relevant to the anxiety producing event, and thoughts relevant to the experimental situation itself, throughout the 10 minute waiting period, revealed significant differences in the frequency of "relevant anxiety" cognitions, F (3, 36) = 4.30, $p < .02$. Arousal S-T subjects made more of these thoughts than Contol and Info subjects ($p < .05$). Control subjects made significantly more "experiment relevant" thoughts than Arousal and Info subjects, F (3, 36) = 3.95, $p < .02$. The "worry and Apprehension" item of the SRAI was positively correlated with the amount of "relevant anxiety" thoughts, $r = .39$, $p < .01$. Arousal S-T subjects displayed a significant positive correlation ($r = .56$, $p < .05$) betwee "relevant anxiety" cognitions and amount of worry during the waiting period, and a negative correlation between anticipatory "anxiety" cognitions and worry during the film ($r = -.62$, $p < .05$). I info subjects showed signif. + relationships between their amount of "rel. anx." cognitions + SRAI scores as well as "worry + apprehension" scores during both the wait period and the film.

Heart rate was examined through the use of residualized scores (Burish, Bloom, Houston and Holmes, Note 5; Holmes and Houston, 1974) Two seperate two-way analyses of variance were used. First the 10 minute wait period was

examined by a 4 (Condition) X 10 (Period) analysis of variance. During the Wait period there was a significant main effect for Conditions, F (3, 27) = 7.04, $p < .001$. It was found through Scheffe Simultaneous Confidence Intervals that Film and Arousal S-T subjects had higher heart rates during this period than Control ($p < .05$) and Info ($p < .06$) subjects. The film period, examined through a 4 (Condition) X 13 (Period) analysis of variance, revealed no significant differences. (Figure 2)

Discussion

While the present study has provided some support for the concept of the "work of worrying", this concept was not shown to be a sufficient explanation for adequate coping with a stressor. The data suggests that focusing one's attention upon anxiety relevant features, such as one's internal state may produce increased levels of physiological arousal. However, there may be a qualitative difference in the kinds of specific anxiety relevant thoughts made by Film and Arousal S-T subjects. It appears that being given a strategy to use and anticipating the stressor produces higher levels of physiological arousal, but no differences in self-report of anxiety.

The results of the present experiment offer some suggestions as to the processes which may be responsible for facilitating coping with a stressor. In terms of the

period of time allocated for the "work of worrying", the 10 minute wait period provided ample opportunity for anticipation, preparation, rehearsal, or a variety of other strategies or thoughts to occur. On the basis of the Attention-Deployment Scale, it appears as if focusing upon anxiety relevant thoughts while waiting for a stressor may be partially related to the physiological level of arousal witnessed at the same time. While there is no information concerning the specific nature of the thoughts engaged in by the subjects during this waiting period, ie., whether they mentally rehearsed the strategy or whether they prepared themselves conciously for the film, suffice it to say that thinking anxiety relevant thoughts as well as experiencing a significant increase in physiological level of arousal could be enough to prepare the individual for the stressor and to assist him to cope with it adequately. An interesting finding was the difference between Info and Arousal S-T subjects in the relationship between their "relevant anxiety" thoughts and the amount of worry they reported during the film. It seems as though the anxiety thoughts made by the Arousal S-T subjects may have been of a specific nature that would be related to a decrease of anxiety during the stressful event, whereas the anxiety relevant thoughts made by Info subjects (although they were fewer than the amount made by Arousal S-T subjects)

were of a nature that was positively related to worry and apprehension during the film. On the other hand, it is possible that the reason why the two self-talk groups coped better with the stressful film has nothing to do with their physiological level of arousal prior to the film or their attention-deployment during the 10 minute waiting period. Conceivably, the use of those strategies during the film could have been sufficient to assist the subjects in coping with the stress of the film and this, without the supposed assistance of the "work of worrying" the subjects allegedly underwent during the 10 minute wait period.

Another interesting finding in the present investigation focuses on the efficacy of the strategy which involved anticipating the stress with a high level of physiological arousal while denying any anxiety and continuing to deny it throughout the stressful event. This appears to be consistent with other studies supporting the finding that denial and intellectualiztion type strategies seem to be the best method to deal with ambiguous types of stressors in both experimental and real life situations (Holmes and Houston, 1974; Houston and Holmes, 1975; Burish et. al., Note 5; Houston, Note 6). These studies support the use of avoidant thinking in situations where the stressor is non-ambiguous (ie. when a sample electric shock is given to subjects before they are told to expect more shocks).

Thus, further research into this area would prove useful in terms of providing people with adequate methods with which to cope with stressful situations in their lives.

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Appendix A

Sample List of Self-Statements

Accident 1

1. This is a Canadian Production.
2. People don't wear hats like that today.
3. The workers are merely actors.
4. What appears as blood is really red dye.
5. The actor's hand does not really go into the machine.
6. Notice the quick cut to another scene.

Accident 2

1. They're even using French Canadians.
2. The high pitched sound sure is irritating.
3. The second actor does not really lose his finger here.
4. Dark liquid spurts from behind the finger.

Accident 3

1. Look at the short hair.
2. The sound of machines plus suspense used are good devices.
3. We know an accident is going to come.
4. Those are old machines. Not as big as the ones today.
5. Notice that the board is not seen penetrating the oncoming actor.
6. Watch the unconvincing way the shipping clerk feigns pain and dying.

Appendix B

Sample List of Self-Statements

Preparing for the Stressor

1. Make a plan to deal with how you may feel during the stressful film.
2. Think about what you have to do.
3. No negative self-statements, just think positively.
4. Don't worry, worry won't help anything.

Confronting and Handling the Stressor

1. Just try to "psych" yourself up.
2. One step at a time, you can handle the situation.
3. You're watching the film but you're in control.
4. You expected some anxiety, but you're in control.

Coping with Feelings of Being Overwhelmed

1. Keep the focus on the present, what is it you have to do?
2. Don't try to eliminate the anxiety entirely, just keep it manageable.
3. When your fear rises, just pause.
4. Label your fear from 0 to 10 and watch it change.

Rewarding Self-Statements

1. Good, you did it, the self talk works.
2. It's all over and it wasn't that bad after all.
3. You probably made more out of your fear than it was worth.
4. You handled it just fine.

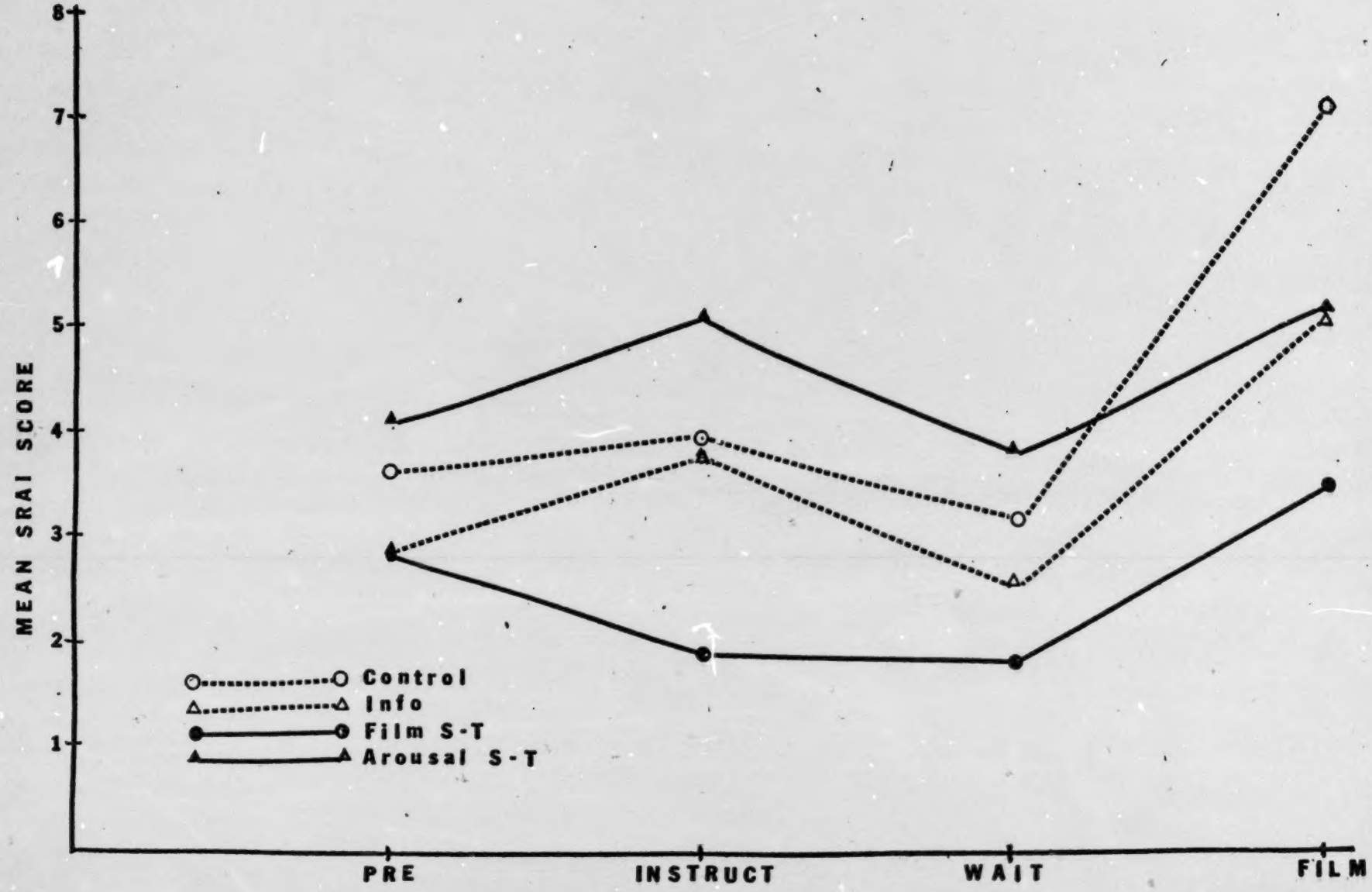
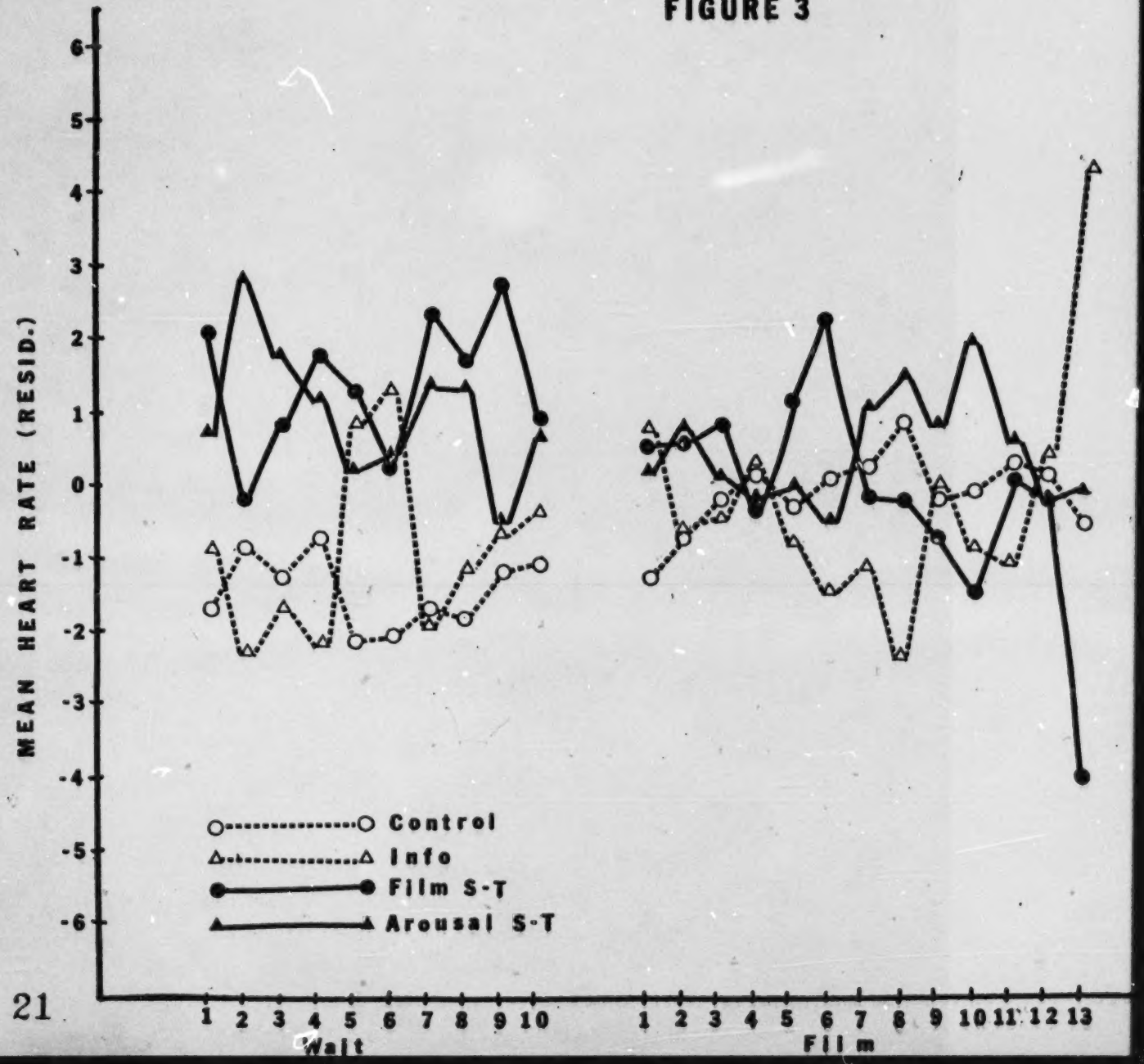


Figure 1
Mean Scores on SRAI for Subjects in Each Group During the Four Treatment Periods

FIGURE 3


MEAN HEART RATE (RESID.)
6
5
4
3
2
1
0
-1
-2
-3
-4
-5
-6
Control
Info
Film S-T
Arousal S-T
1 2 3 4 5 6 7 8 9 10
Wait
1 2 3 4 5 6 7 8 9 10 11 12 13
Film